Small Business Briefing
For TIPSS-3

July 14, 2004

Agenda

- What is the CMM/CMMI?

- What is the IRS Policy?

- What is the Process Appraisal Review Methodology (PARM)?

- How to Communicate with the CMM Team?

- Questions

Origin Of The CMM

• DoD established and funded the initial Software Engineering Institute (SEI) at Carnegie-Mellon University in 1984

• SEI developed the Capability Maturity Model (CMM) to alleviate recurring software system issues (e.g., over budget, late delivery, poor quality)

• Current version in practice since 2/93

What is the Capability Maturity Model (CMM)?

- Process management and quality improvement concepts applied to software

- Software process maturity means the extent to which a process is explicitly:
  - defined
  - managed
  - measured
  - controlled and effective

- Key Process Areas identify a cluster of related activities that, when performed collectively, achieve a set of goals
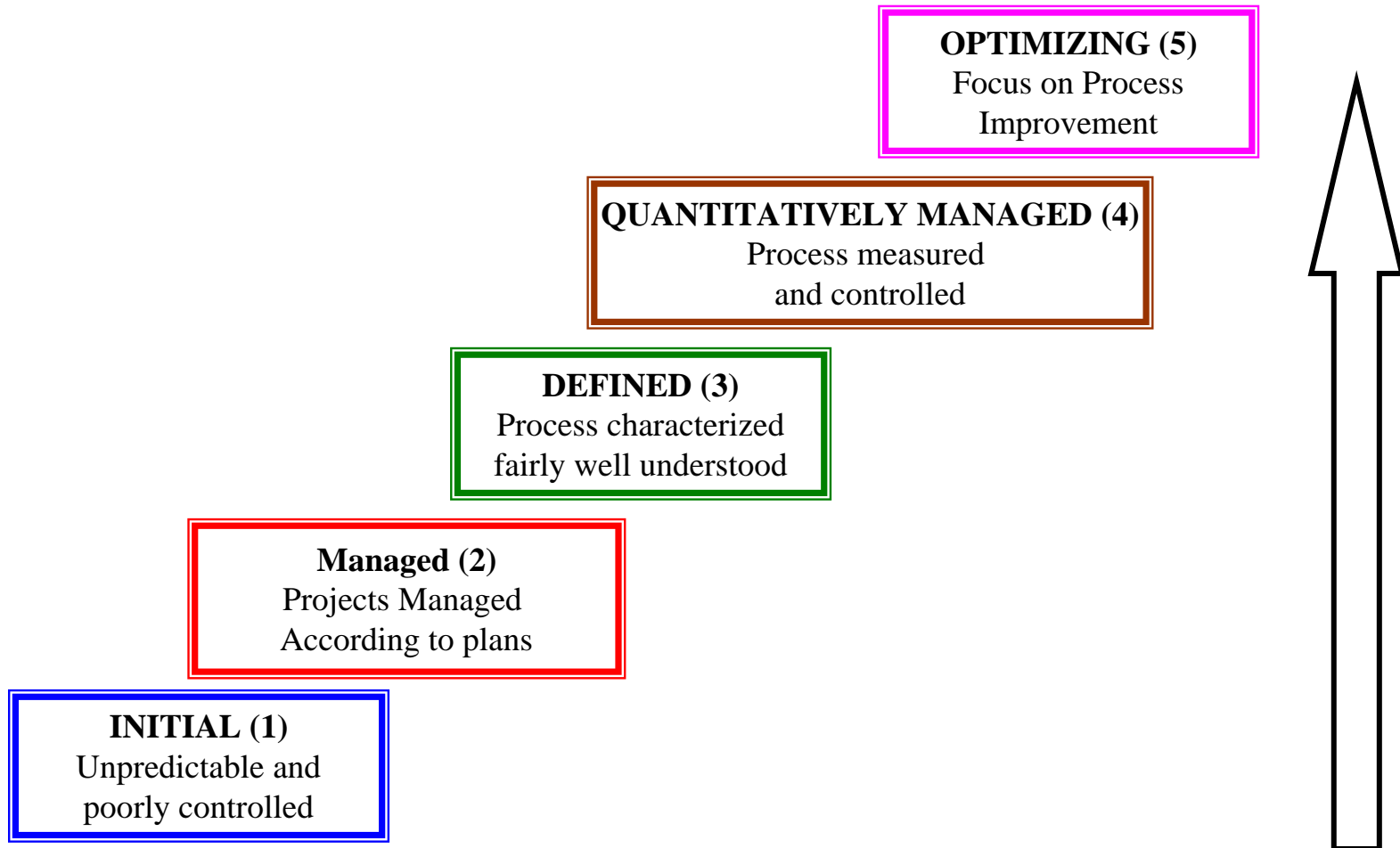
Procurement Shops Requiring CMM Level 2

- Some Federal agencies that have required contractors to be CMM compliant as a condition of contract award:
  - Department of Defense
  - U.S. Customs
  - FAA
  - Internal Revenue Service
  - Dept. Of Veterans Affairs
  - Veterans Benefits Administration
  - U.S. Coast Guard
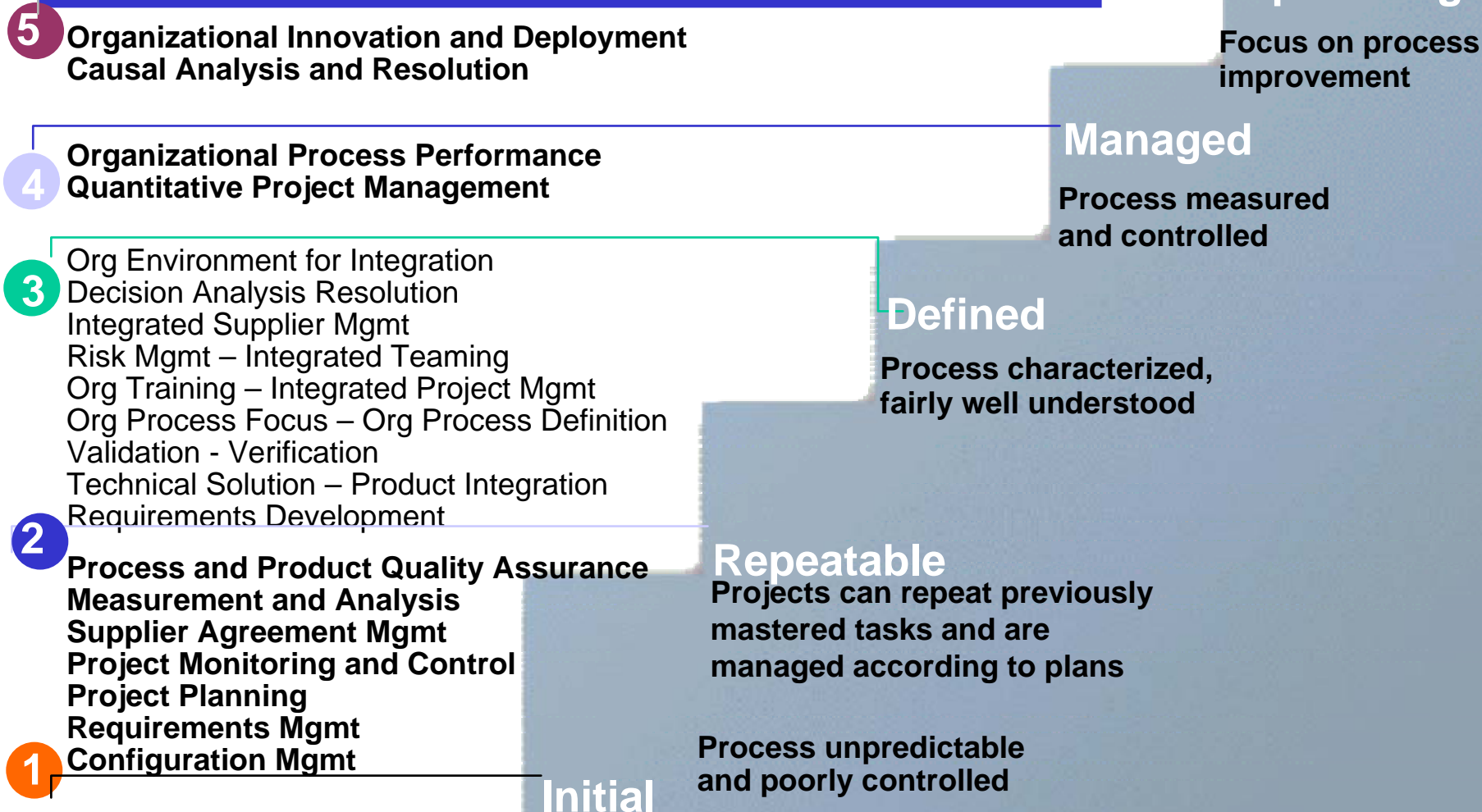 - Defense Finance and Accounting Service

What's CMMI About?

- CMMI includes models from the following disciplines: Systems Engineering/Software Engineering (SW)/Integrated Product and Process Development/Supplier Sourcing. (Version 1.1)

- SEI sunset the CMM December 2003

- Some IRS contractors have transitioned to CMMI-SW

- CMMI-SW Level 2 requires more than CMM Level 2

The Maturity Levels

OPTIMIZING (5)
Focus on Process
Improvement

QUANTITATIVELY MANAGED (4)
Process measured
and controlled

DEFINED (3)
Process characterized
fairly well understood

Managed (2)
Projects Managed
According to plans

INITIAL (1)
Unpredictable and
poorly controlled

CMMI Process Areas by Maturity Level

Optimizing

Focus on process improvement

5 **Organizational Innovation and Deployment**
Causal Analysis and Resolution

Managed

Process measured and controlled

4 **Organizational Process Performance**
Quantitative Project Management

3 Org Environment for Integration
Decision Analysis Resolution
Integrated Supplier Mgmt
Risk Mgmt – Integrated Teaming
Org Training – Integrated Project Mgmt
Org Process Focus – Org Process Definition
Validation - Verification
Technical Solution – Product Integration
Requirements Development

Defined

Process characterized, fairly well understood

2 **Process and Product Quality Assurance**
Measurement and Analysis
Supplier Agreement Mgmt
Project Monitoring and Control
Project Planning
Requirements Mgmt

Repeatable

Projects can repeat previously mastered tasks and are managed according to plans

1 **Configuration Mgmt**

Process unpredictable and poorly controlled

Initial

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IRS Procurement Policy & Procedure: P&P 39.1(B)

- IRS CMM Policy 39.1(B) states:
  - CO shall include CMMI-SW clauses in Section H of contracts
  - IRS software contractors shall be CMMI-SW Level 2, or higher
  - Contractors shall participate in PARM

Summary on Policy

- IRS policy requires software development contractors to be CMMI-SW Level 2
  - Policy flows down to subcontractors
  - Formalizes the requirement for participation in the PARM

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Process Appraisal Review Methodology (PARM)

- An annual multi-phase methodology
- Phase I: Review contractor appraisal data
- Phase II: Review contractor project-specific process documentation
- Phase III: Conduct onsite structured briefings, interviews, and walkthroughs
- Phase IV: Conduct a Standard CMMI Appraisal Method for Process Improvement (SCAMPI[sm]) Class A and assign a rating.

Appraisals are the Heart of the PARM

- Contractor-submitted PARM materials include:
  - Process improvement infrastructure and activities
  - Data describing appraisals

- Types of Appraisals accepted for PARM:
  - Standard CMMI Assessment Method for Process Improvement (SCAMPI), Class A

PARM: Objectives

- Monitor IRS contractor software process maturity, minimizing the necessity to conduct SCAMPIs, to ensure SEI CMMI-SW Level 2 or higher capabilities are maintained for post-award performance of IRS software development tasking

- Ensure that IRS software development projects receive the benefits of CMMI-SW Level 2 or higher capabilities

PARM: Objectives (cont.)

- Reduce the risk, and increase the likelihood of success, of software development contracts and tasks

- Minimizes time and cost, for contractors and for the IRS, related to ensuring compliance with required CMMI-SW Level 2

- Build a repository of data that justifies IRS decisions and actions

Software Development Activities

- Any activity included in commonly accepted Software Development Life Cycles (SDLC):
  - Project planning and oversight
  - Establishing a software development environment
  - System requirements analysis
  - System design
  - Software requirements analysis
  - Software design
  - Software implementation and unit testing
  - Unit integration and testing

Software Development Activities (cont.)

- More SDLC activities:
  - Software qualification testing
  - Software and hardware integration and testing
  - System testing
  - Preparing for software use
  - Preparing for software transition
  - Software configuration management
  - Software product evaluation
  - Software quality assurance
  - Corrective action

Software Development Activities (cont.)

- More SDLC activities:
  - Joint technical and management reviews
  - System retirement
  - Software maintenance

    (Modification of a software product after delivery to correct faults, to improve performance or other attributes, or to adapt to a modified environment)

Software Development Activities (cont.)

- Even more SDLC activities:
  - Software prototyping, RAD, JAD
    - Special processes used to accomplish portions of the system design
  - COTS installation/modification
    - May require significant effort by the vendor to adjust application parameters
    - COTS product modification for specific applications
  - Web site development

PARM Summary

- All contractors participate in Phase I

- Phases I to III: The CMM Review Team requests re-useable appraisal data from the contractor. This information is used to verify the contractor's CMMI-SW maturity rating.

- Phase IV: An appraisal may be conducted when there is insufficient evidence of Level 2 practices. Only Phase IV determines a rating.

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- **How to Communicate with the CMM Team?**
- Open discussion

CMM Review Team

For the purposes of the TIPSS-3 solicitation, all communication shall be made through Ethel Carter.

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- **Open discussion**

Need More on the CMM or CMMI?

- Software Engineering Institute's home page:

    http://www.sei.cmu.edu

CMM Trademarks/Service Marks

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Question & Answer